PMA-233

JMPS Future Operational & Networking Requirements

CDR Mike Hecker

8 May 2000

Briefing Agenda

PURPOSE:

1) Update JMPS team on Future Plans for Mission Planning
2) Outline Programs with Which JMPS May Have to Interface
3) Outline Architecture Options and Determine if JMPS Framework Precludes Any Options

- **Operational Requirements**
- **Strategic Relationships**
- **Engineering an Architecture**
- **Summary**

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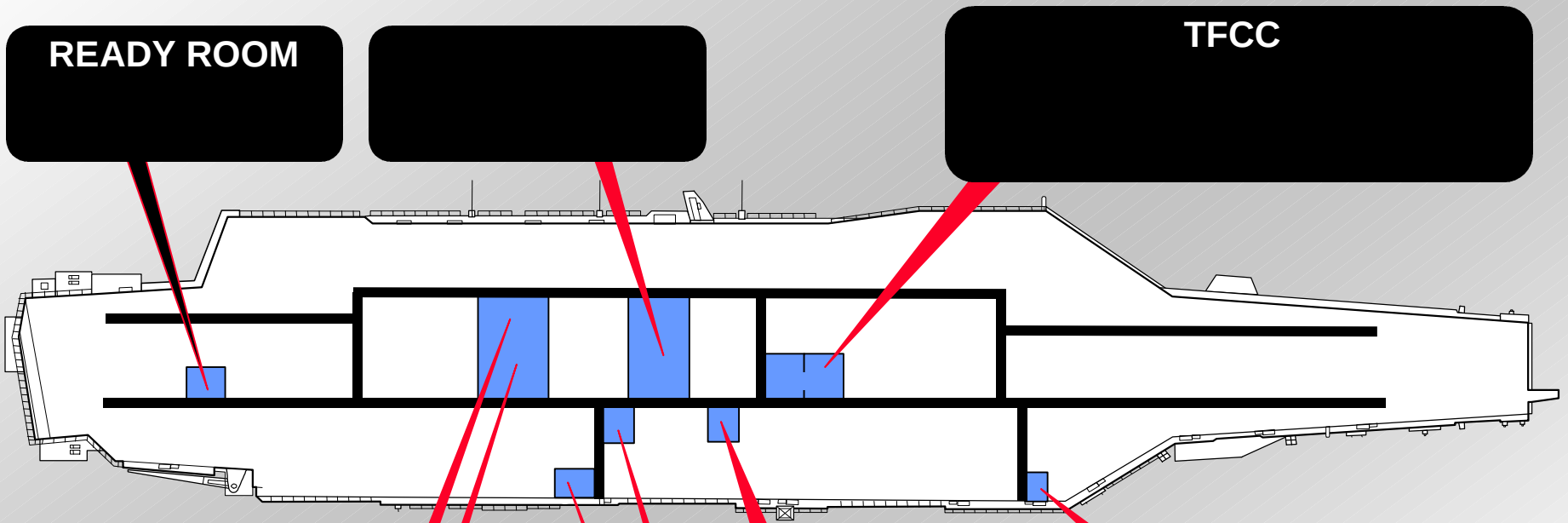
- **Operational Requirements**
  - **Traditional Mission Planning (Deliberate Planning)**
  - **Merged Planning and Execution (Responsive Planning)**
  - **Time Critical Strike (Deterministic Planning)**
  - **Information Management & Warfare**
  - **Summary of Unvalidated Requirements for 2003**
- **Strategic Relationships**
- **Architecture Options**
- **Summary**

Operational Requirements

Deliberate Mission Planning

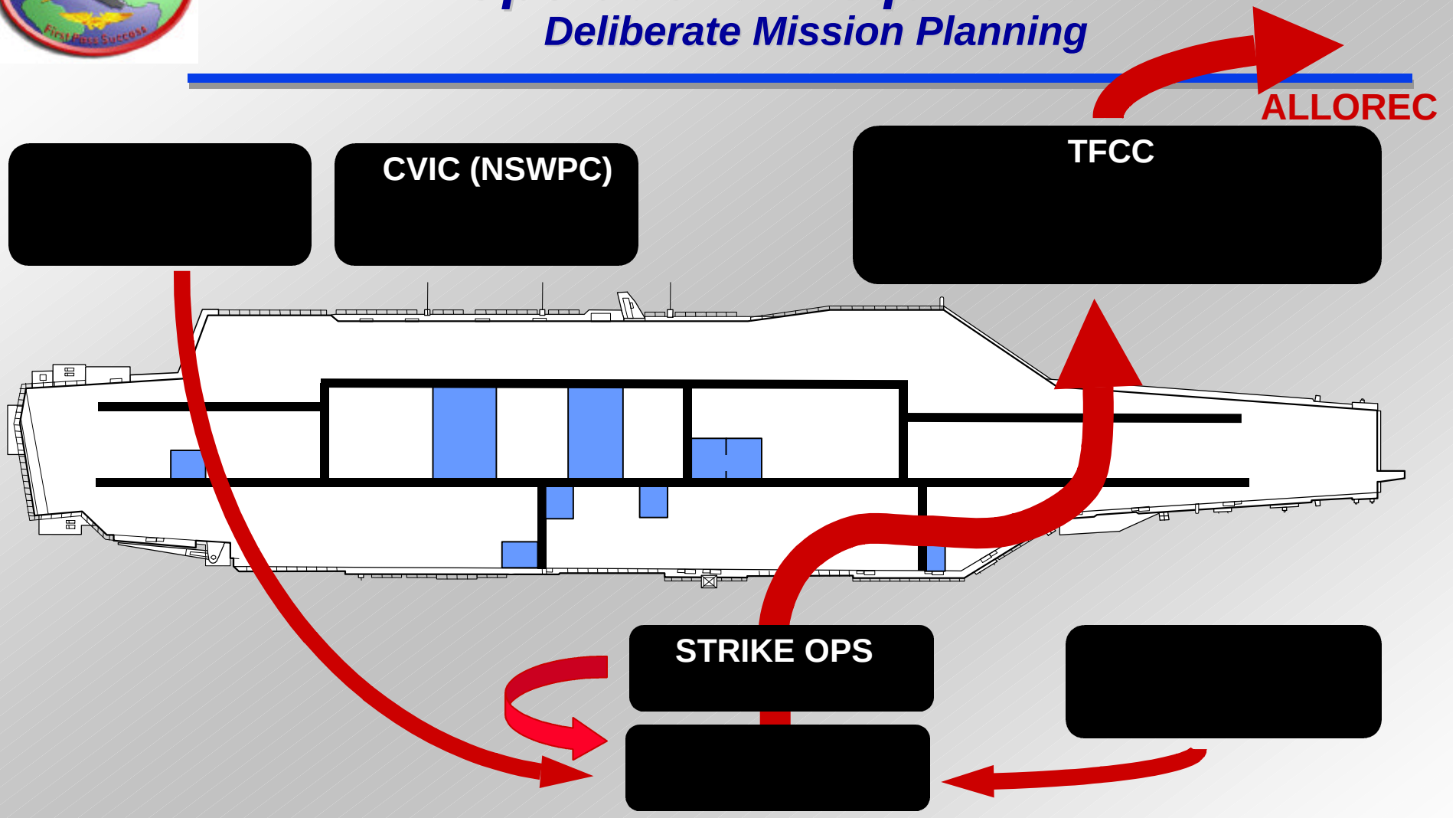


TIME NOW

T- 72 | T- 48 | T- 24 | T- 0

Operational Requirements

Deliberate Mission Planning



TIME NOW

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Operational Requirements

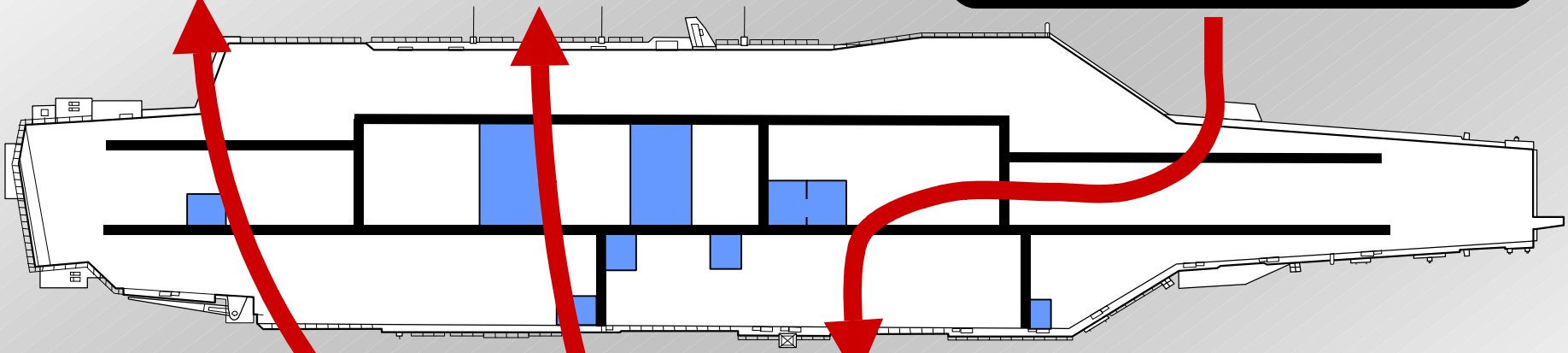
Deliberate Mission Planning

JIPTL

[redacted]

CVIC (NSWPC)

TFCC



DRAFT AIR PLAN

STRIKE OPS

[redacted]

DRAFT LOAD PLAN

[redacted]

TIME NOW

T- 72 T- 48 T- 24 T- 0

Operational Requirements

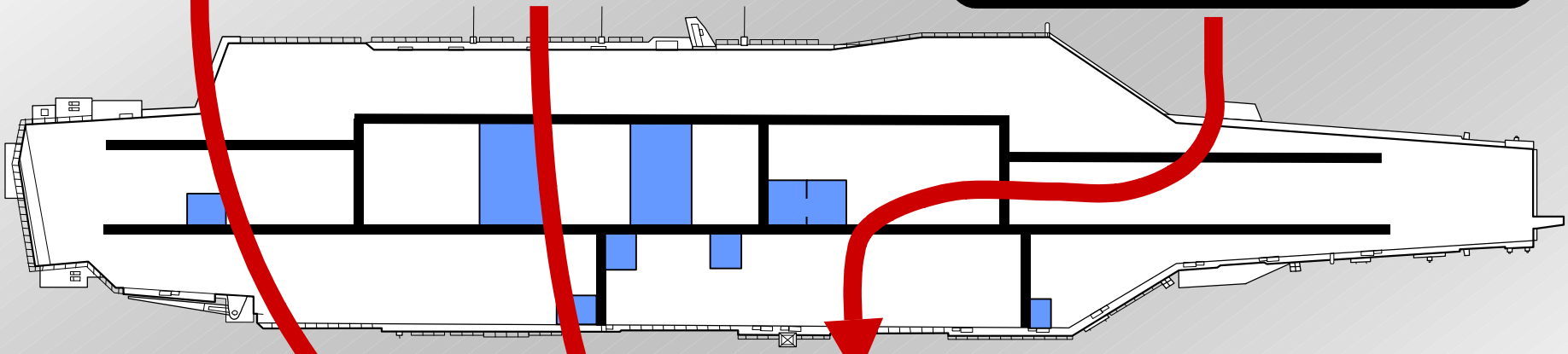
Deliberate Mission Planning

DRAFT ATO

[redacted]

CVIC (NSWPC)

TFCC



CAG LAPTOP BRIEF

STRIKE OPS

[redacted]

[redacted]

TIME NOW

T- 72 T- 48 T- 24 T- 0

Operational Requirements

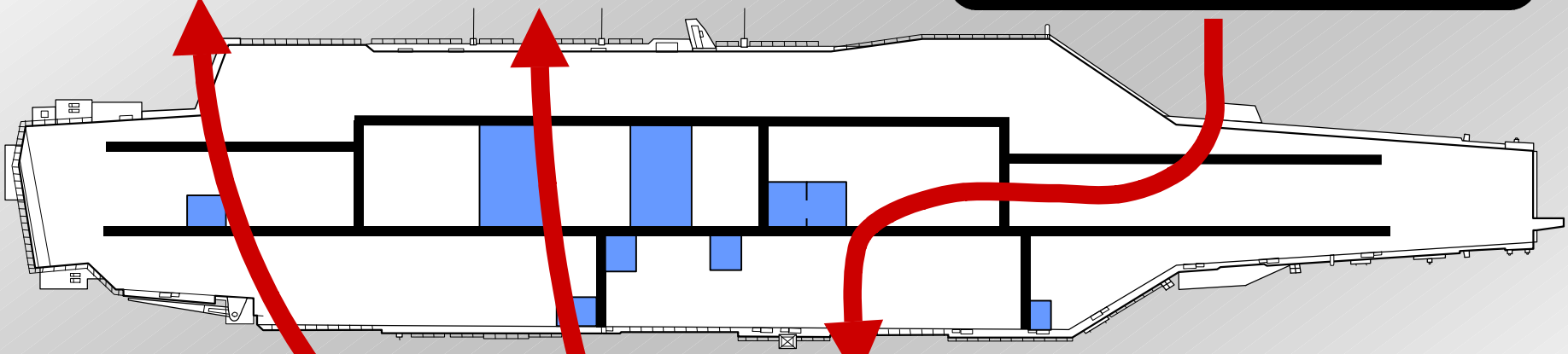
Deliberate Mission Planning

ATO, ACO SPINS

[redacted]

CVIC (NSWPC)

TFCC



AIR PLAN

STRIKE OPS

[redacted]

LOAD PLAN

[redacted]

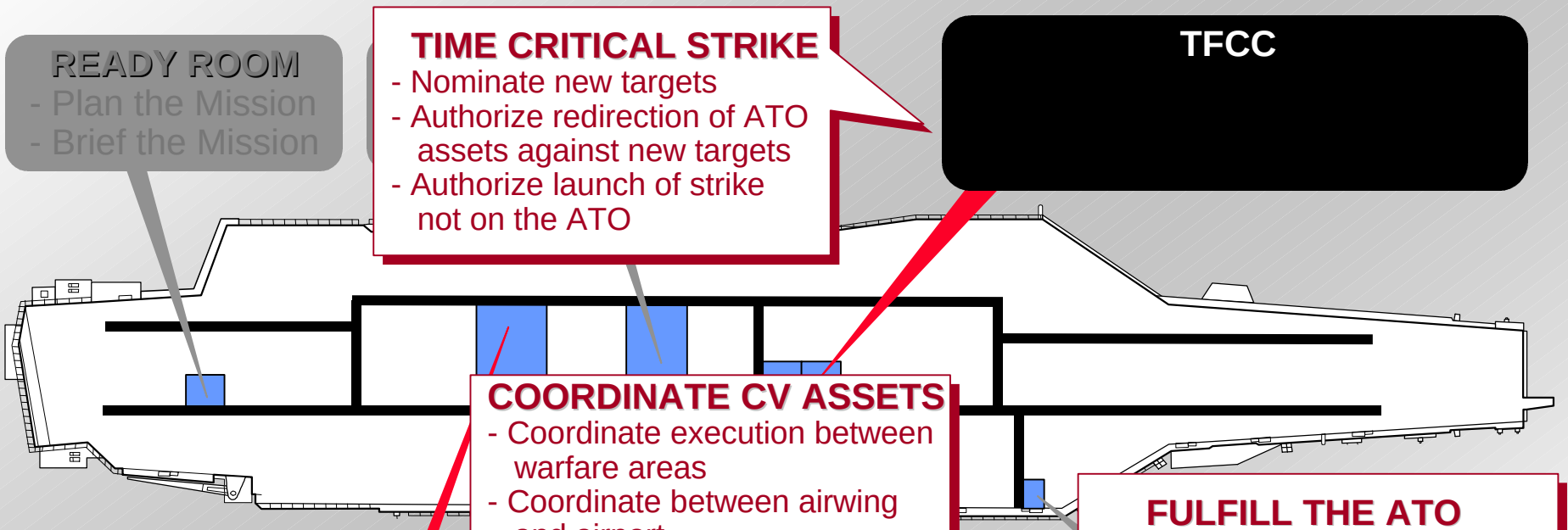
TIME NOW

T- 72 T- 48 T- 24 T- 0

Operational Requirements
Deliberate Mission Planning

- DoD Spends Much Time Wailing about Inadequacy of ATO Process
  - However, it does work well at a strategic and theater level
  - No one can agree on a better approach (yet)
- Much Experimentation Underway to Define a Better Approach
  - NAVSEA: SPF
  - Tomahawk: Strike Cell
  - FBE: Naval Fires
  - JEFX: BCC
  - PMA233: REDS
  - CARGRUs

Operational Requirements
Merged Planning and Execution



TIME CRITICAL STRIKE
- Nominate new targets
- Authorize redirection of ATO assets against new targets
- Authorize launch of strike not on the ATO

TFCC

READY ROOM
- Plan the Mission
- Brief the Mission

COORDINATE CV ASSETS
- Coordinate execution between warfare areas
- Coordinate between airwing and airport
- Make recommendations on course of action

[redacted]

- Schedule the War

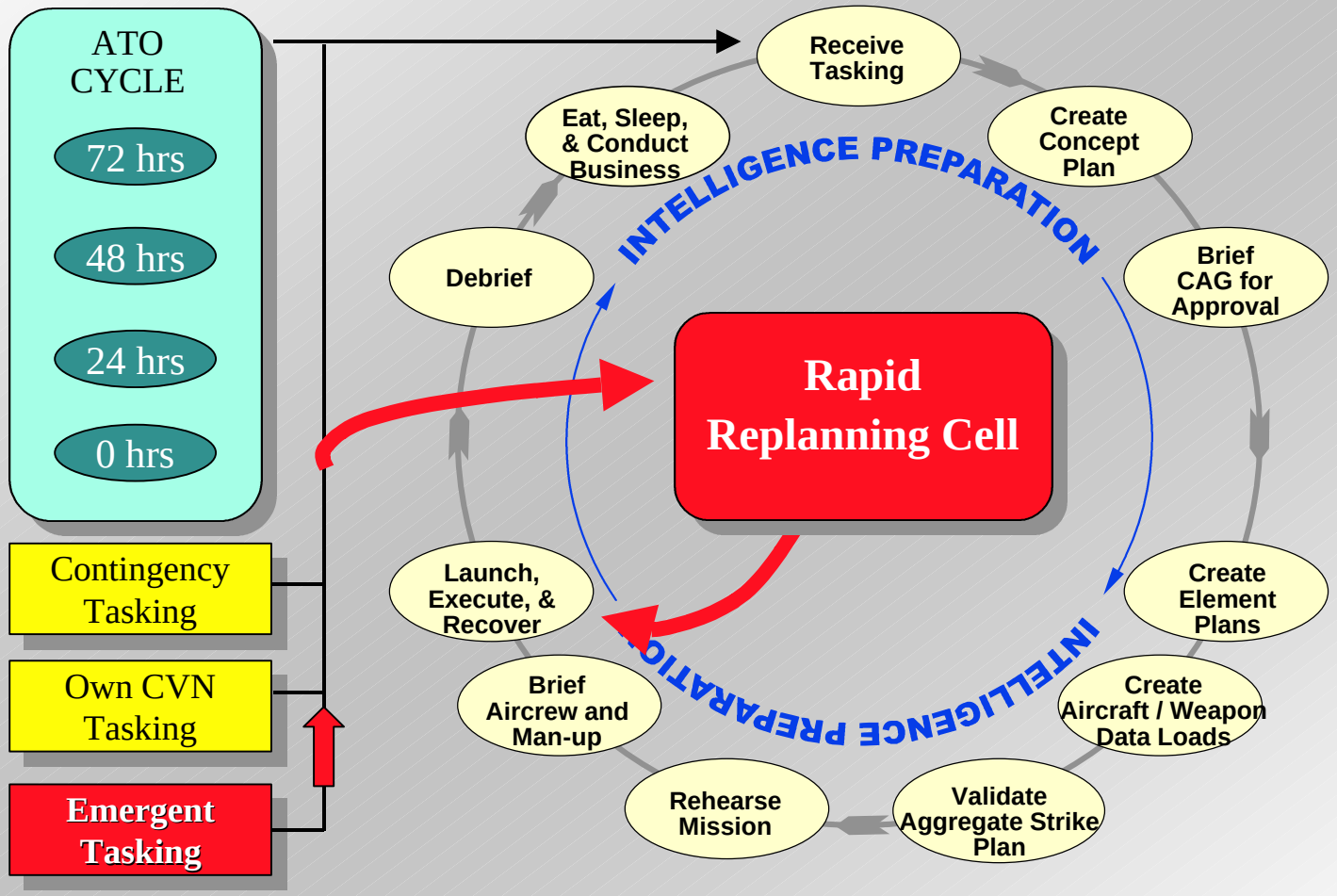
CAG OPS
- Coord. Resources

[redacted]

FULFILL THE ATO
- Redirect assets within ATO
- Redirect sorties from common use to ATO
- Launch spares
- Adjust tanking plan

T- 72 T- 48 T- 24 TIME NOW

Operational Requirements
Time Critical Strike



Concepts such as dominant maneuver, precision engagement will force a change in our concepts of command and control

Operational Requirements
Information Management and Information Warfare

- **I have Nothing Intelligent to Say**

Operational Requirements

Top Level JMPS Combat / Force Level Requirements

	OBSERVE	ORIENT	DECIDE	ACT
Strategic / Theater Level				
Force Level		-Assessing -Targeting -Prioritizing	-Planning -Decision Support -Course of Action -Weaponeering	-Tasking -Coordination
Unit Level			-Planning -Weaponeering	

	JMPS Combat/Force Reqt
	JMPS Basic Reqt

- **In Addition, Requirement to Support Compartmented, Classified Data (e.g. L.O. Data)**

REFERENCE: NWPS Operational Architecture 0.6 (N62)

Operational Requirements

Top Level JMPS Combat / Force Level Requirements

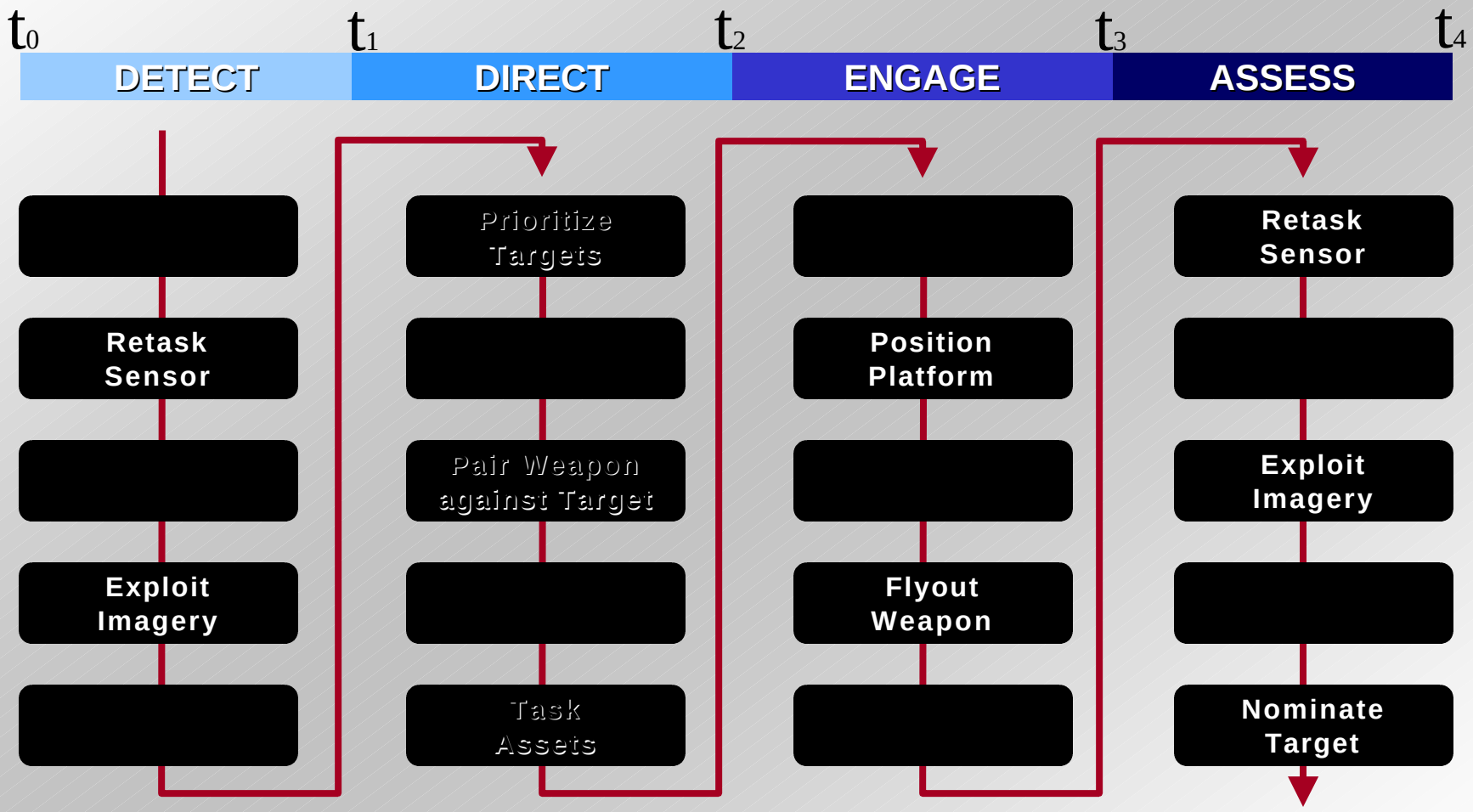
	Non-Realtime	Realtime (Soft)
Strategic / Theater Level		
Force Level	-Planning - Course of Action -Weaponeering	-Planning -Decision Support -Course of Action -Weaponeering -Tasking -Coordination
Unit Level	-Planning -Weaponeering	-Planning? -Weaponeering?

	JMPS Combat/Force Reqt
	JMPS Basic Reqt

- **In Addition, Requirement to Support Compartmented, Classified Data (e.g. L.O. Data)**

Operational Requirements

Top Level JMPS Combat / Force Level Requirements



- **In Addition, Requirement to Support Compartmented, Classified Data (e.g. L.O. Data)**

REFERENCE: ONR TCS FNC CONOPS

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1) Update JMPS team on Future Plans for Mission Planning
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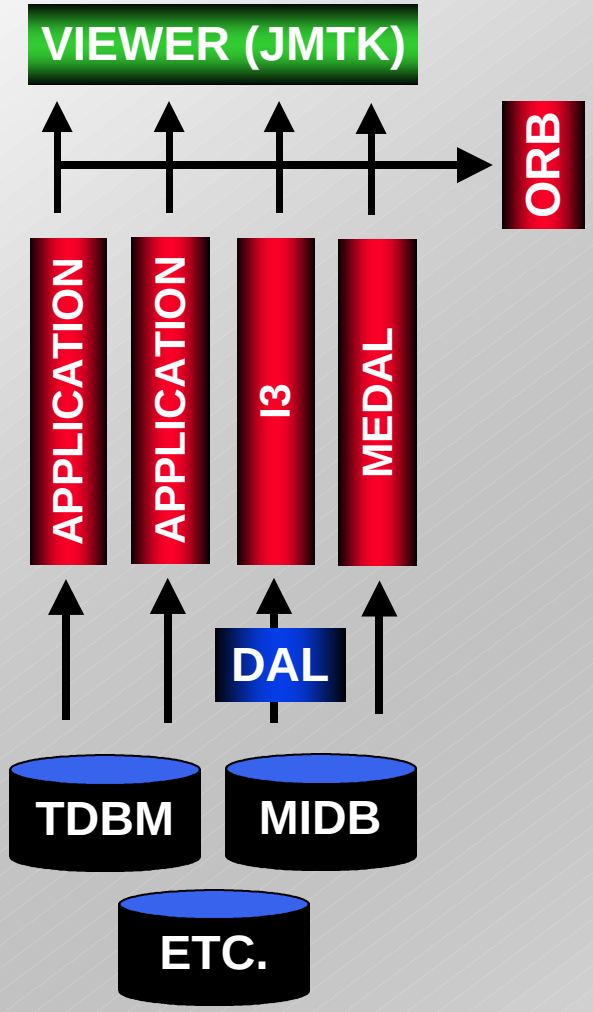
- Operational Requirements
- Strategic Relationships
  - Programs
  - Program Wanna-Be's
  - Integration Efforts
  - R&D
  - Overlapping Objectives
- Architecture Options
- Summary

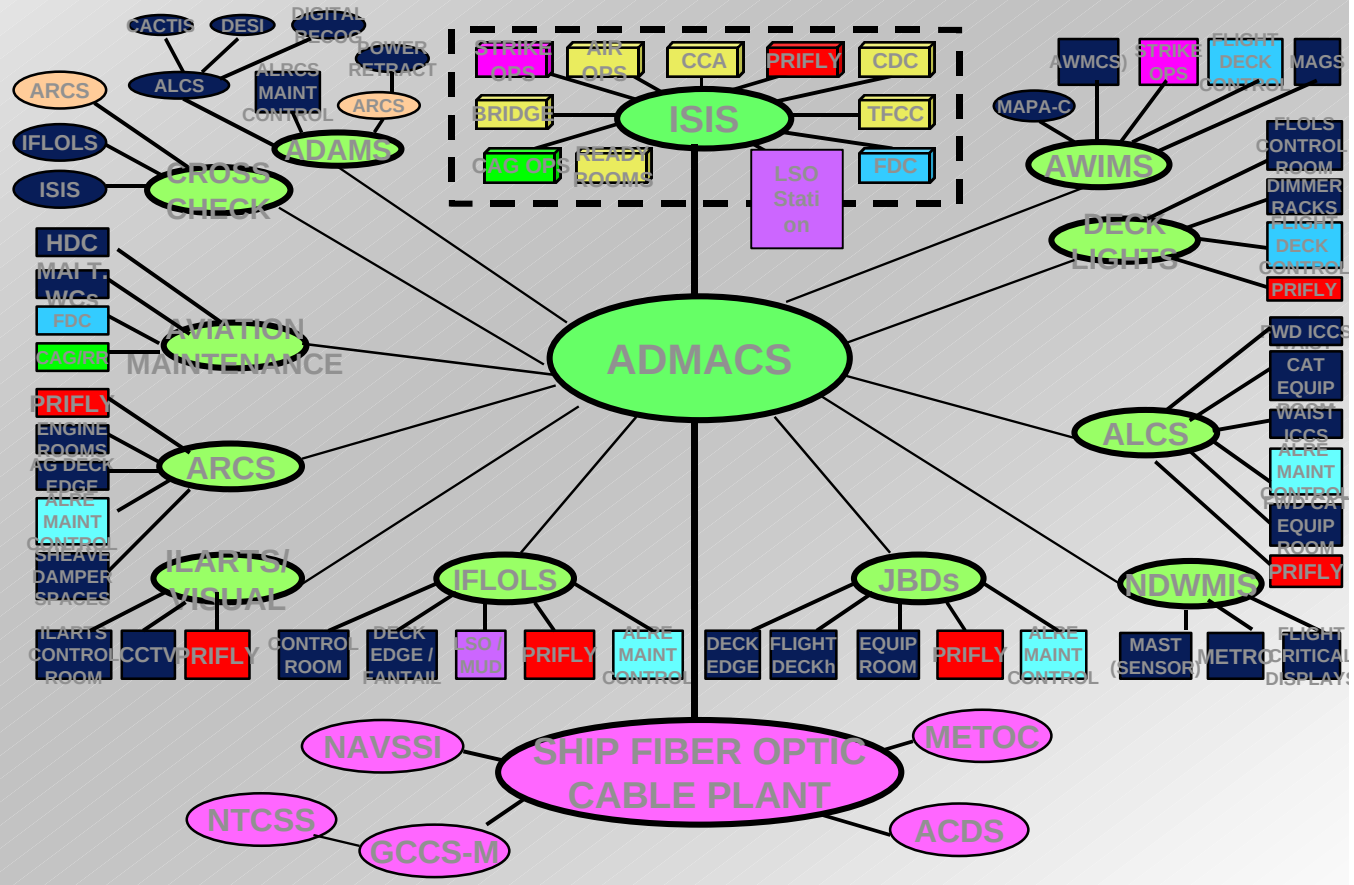
Strategic Relationships
Programs: GCCS-M



- Two Tier Client/Server Architecture
- Universal Viewer is JMTK
- Strong UNIX Legacy
- DAL is not the Messiah to Save JMPS
- Redefining GCCS Integration, Moving to N-tier
  - Andrew Cox ORB layer
  - Discussions with ADM S?
  - REDS Integration
  - Maybe in 5.X timeframe
- MCCDC, JMPS, ONR, DARPA, EMPRS

Strategic Relationships
Programs: ADMACS

- Two Tier Architecture
- Have Discussed N-tier with REDS
- Overlapping Requirements with JMPS
  - ATO Parser
  - Air Plan
  - Load Plan
  - Weather
- Understand Realtime and Have a Realtime LAN
- Interested in Moving Non-realtime Applications to NT
- Considering Extra Glass in the Ready Rooms



Strategic Relationships
Program Wanna-Be's: CAC2S

SUBJECT: 70--COMMON AVIATION COMMAND AND CONTROL SYSTEM (CAC2S)

DESC: The purpose of this announcement is to conduct market research...The Marine Corps Systems Command...is inviting industry comments and recommendations on its operational requirement, system concept, and program acquisition schedule for the Common Aviation Command and Control System (CAC2S)....The proposed CAC2S will replace the C2 capabilities and functions of the **Marine Aviation Command and Control System (MACCS)**, and consolidate them into one efficient system that will allow the United States Marine Corps...to plan and execute the six functions of Marine aviation (i.e. **Control of Aircraft and Missiles**, Anti-air Warfare, **Offensive Air Support**, Assault Support, Electronic Warfare, and Aerial Reconnaissance)....The CAC2S will be used by...the **Tactical Air Command Center (TACC)**, Tactical Air Operations Center (TAOC), Direct Air Support Center (DASC), Marine Air Traffic Control Detachment (MATCD), and Low Altitude Air Defense (LAAD) battalion. The CAC2S will provide **modular/scaleable facilities and components**...

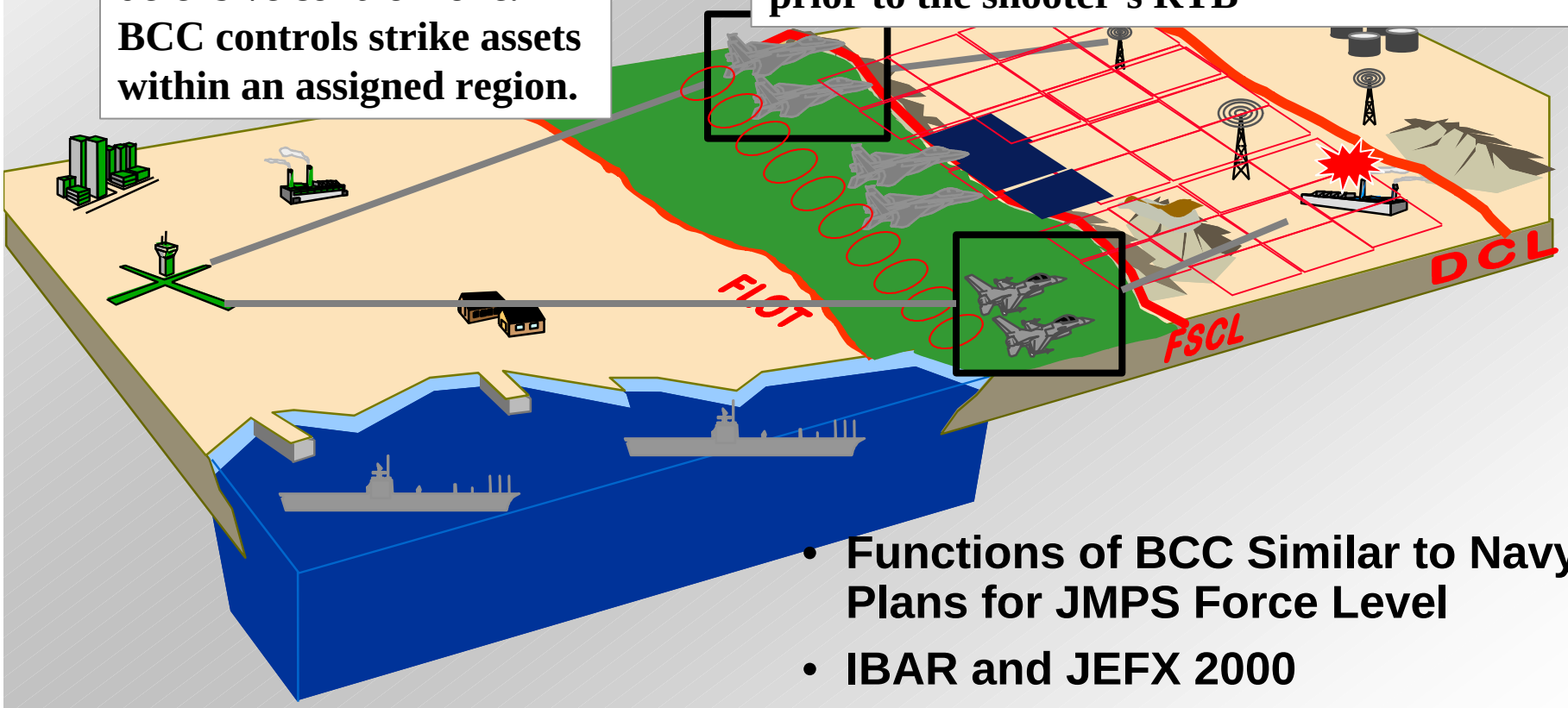
- **CAC2S Grew Out of MACCS**
- **MACCS is an Integration Layer, Similar to REDS but Based on Intelligent Agents**
- **Overlap with JMPS Force in Area of Decsion Aids and Maintaining Common Tactical Picture (CTP)**

REFERENCE: Commerce Business Daily, March 24, 2000

Strategic Relationships
Programs Wanna-Be's: BCC

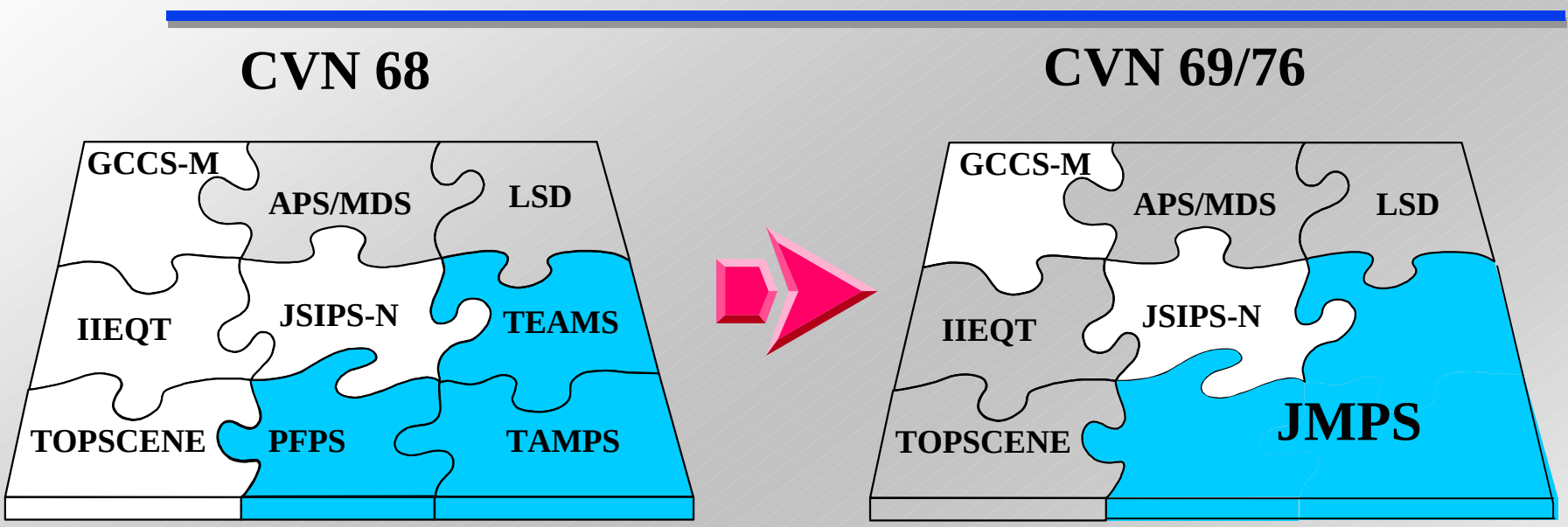
Battlespace is divided up into regions based on geography, location of friendly troops, and defensive control zone. BCC controls strike assets within an assigned region.

BCC will maintain a dynamic target list and task assets against high priorities. If no targets exist Kill Boxes will be assigned. If no targets are present, the BCC will assign a fixed target prior to the shooter's RTB



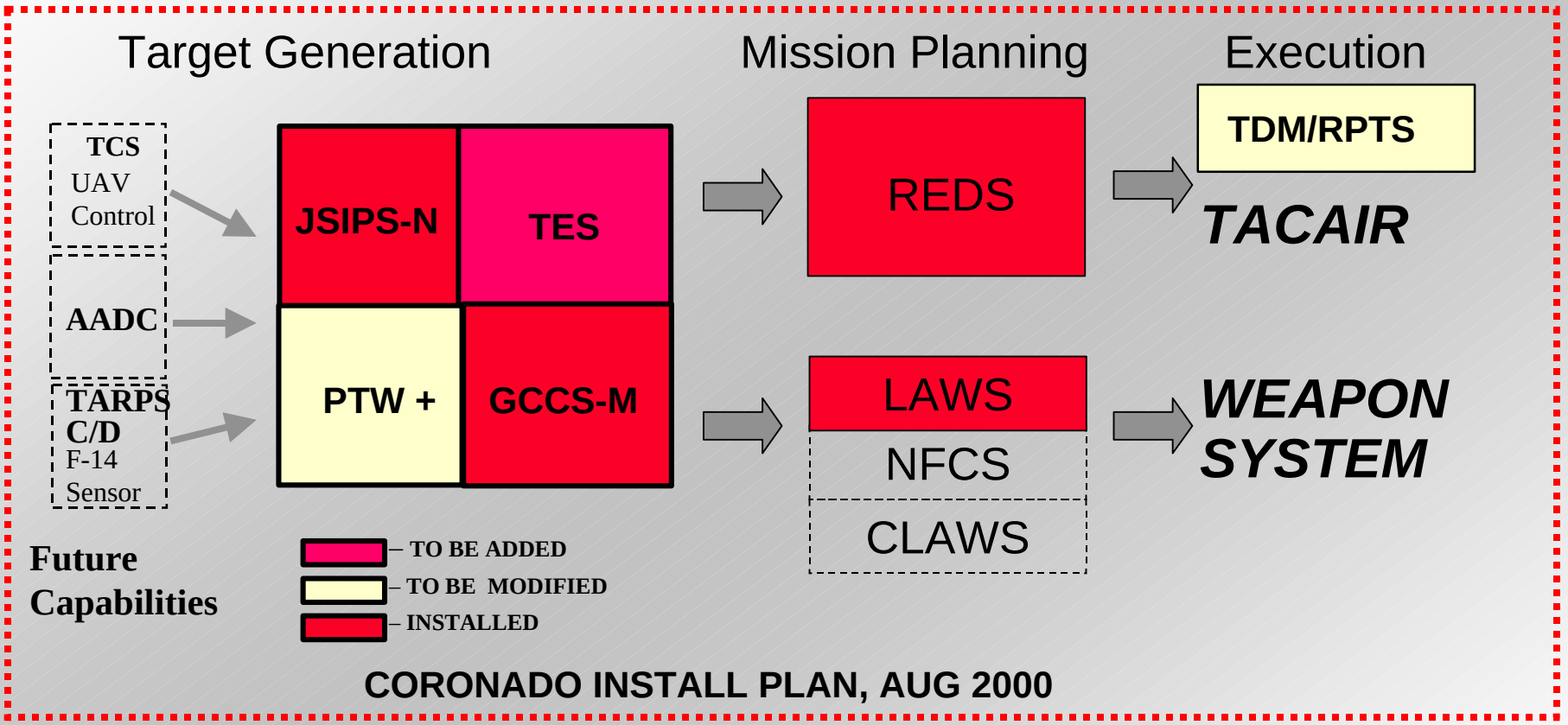
- Functions of BCC Similar to Navy's Plans for JMPS Force Level
- IBAR and JEFX 2000
- Conversation at Salt Lake Hilton Bar

Strategic Relationships
Integration Efforts: NSWPC



- Not a Program, Rather a System Engineering Effort
- Seeking Integration at the Data Level (SPF)
- Tomahawk Has not Played and Will not Until Security Issues can be Resolved (reference converastion with Capt Prevatt, Smi Planning Conference in London)
- NSWPC May Become an Integration Effort Between JMPS and GCCS
  - If that's the case, JMPS needs to work a lot closer with NSWPC than it has to date

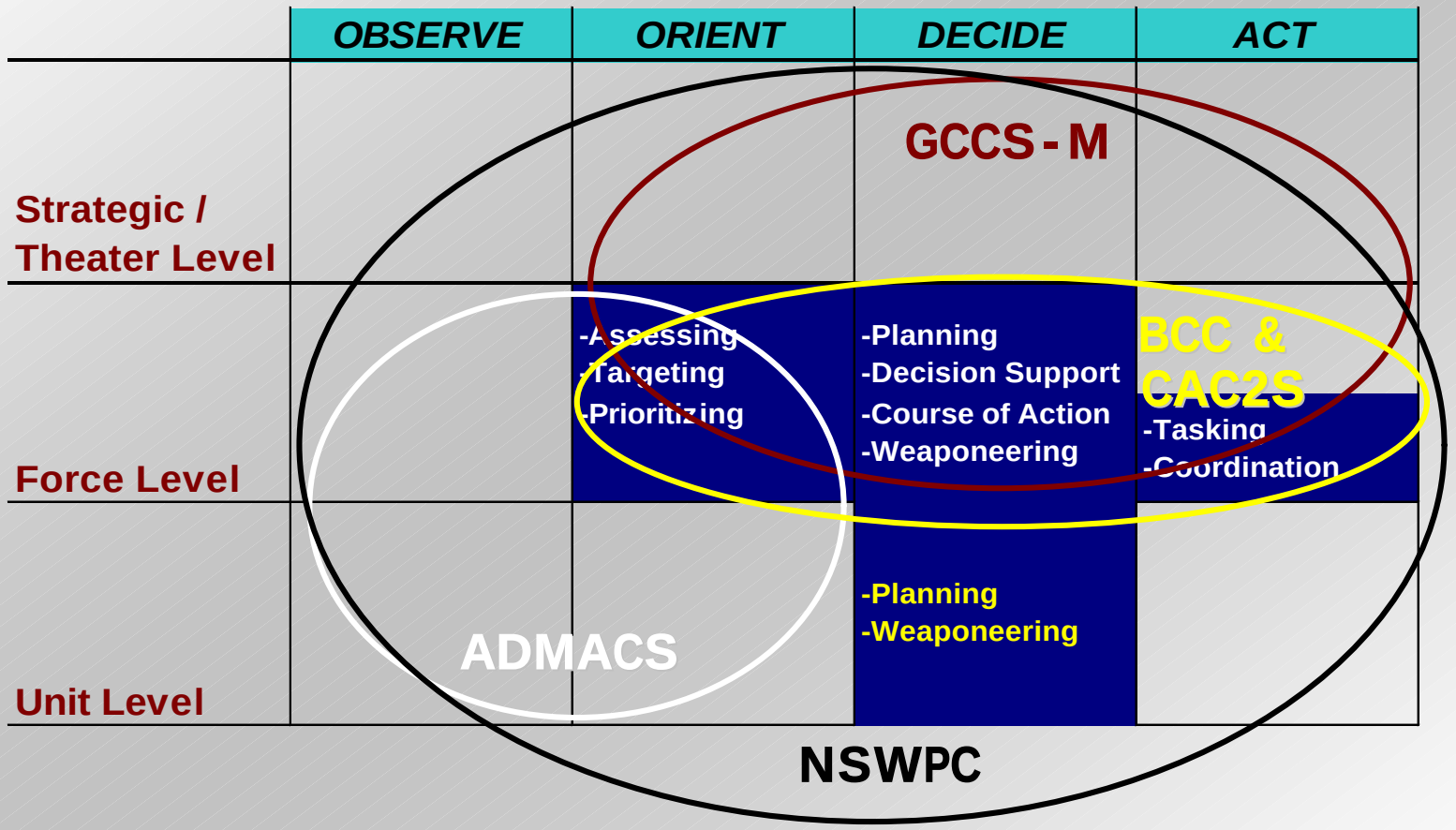
Strategic Relationships
R&D: REDS



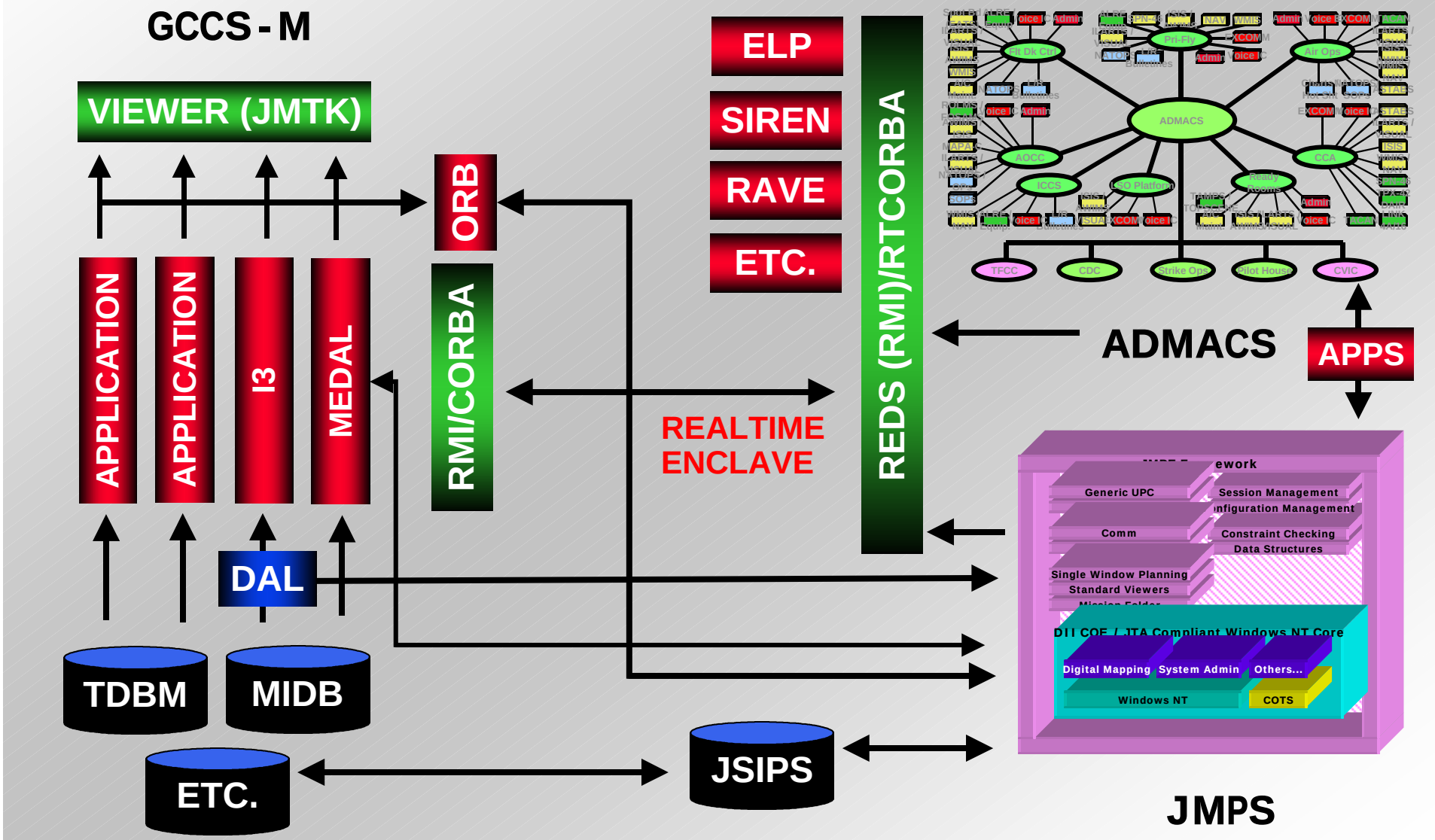
- **R&D Effort for JMPS (and GCCS-M?)**
  - **Defining future requirements**
  - **Comand tools and middleware technologies**
- **N-tier Architecture with EJB and BEA**

REFERENCE: NCW Executive IPT (May 2000)

Strategic Relationships
Overlapping Objectives



Strategic Relationships
Current Vector



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- Operational Requirements
- Strategic Relationships
- Engineering an Architecture
  - Building a System of Systems
  - Collaborative Approach
- Summary

Engineering an Architecture
Building a System of Systems

DIRECTED
CENTRALLY PLANNED & MANAGED

- System can be optimized
- No natural robustness
- Requires maximum wisdom by the acquiring organization
- All risk born by the development organization

GCCS

COLLABORATIVE
CENTRAL PLANNING, BUT WITHOUT COERCIVE POWER

Internet GCSS

- Natural robustness through disassembled operations
- Risk spreading
- Can draw on largest community
- Always more expensive for given integrated functionality
- Acquiring organization cannot control final configuration

STANDALONE
NO CENTRAL PLANNING, INDIVIDUAL PROGRAM MANAGEMENT

Traditional Acquisition

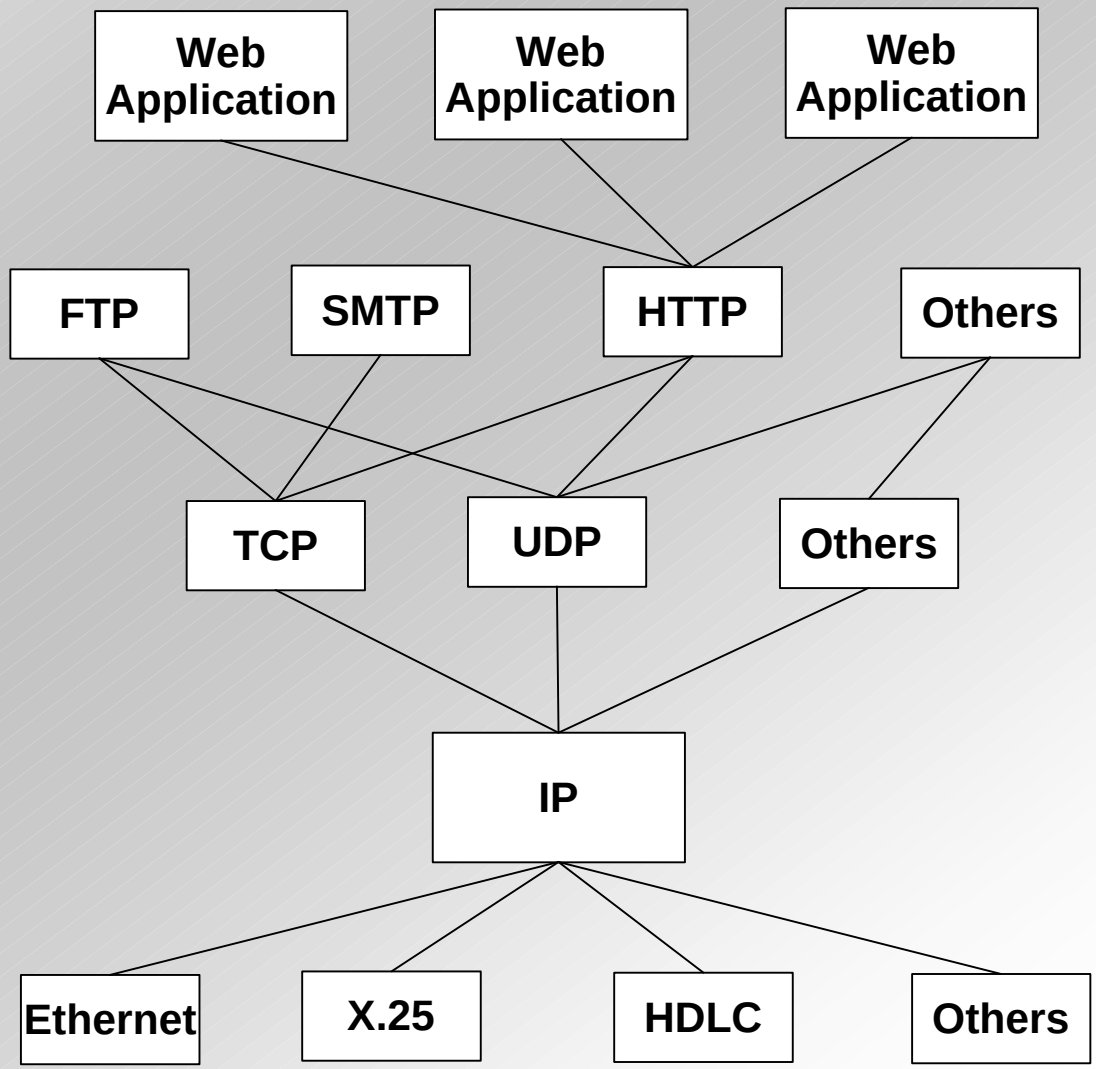
- System can be optimized
- No natural robustness
- All risk born by the development organization
- More expensive if redundant functions developed
- Additional expense of retrofitting interoperability

REFERENCE: The Art of System Architecting, Mark Meyer, CRC, 1998

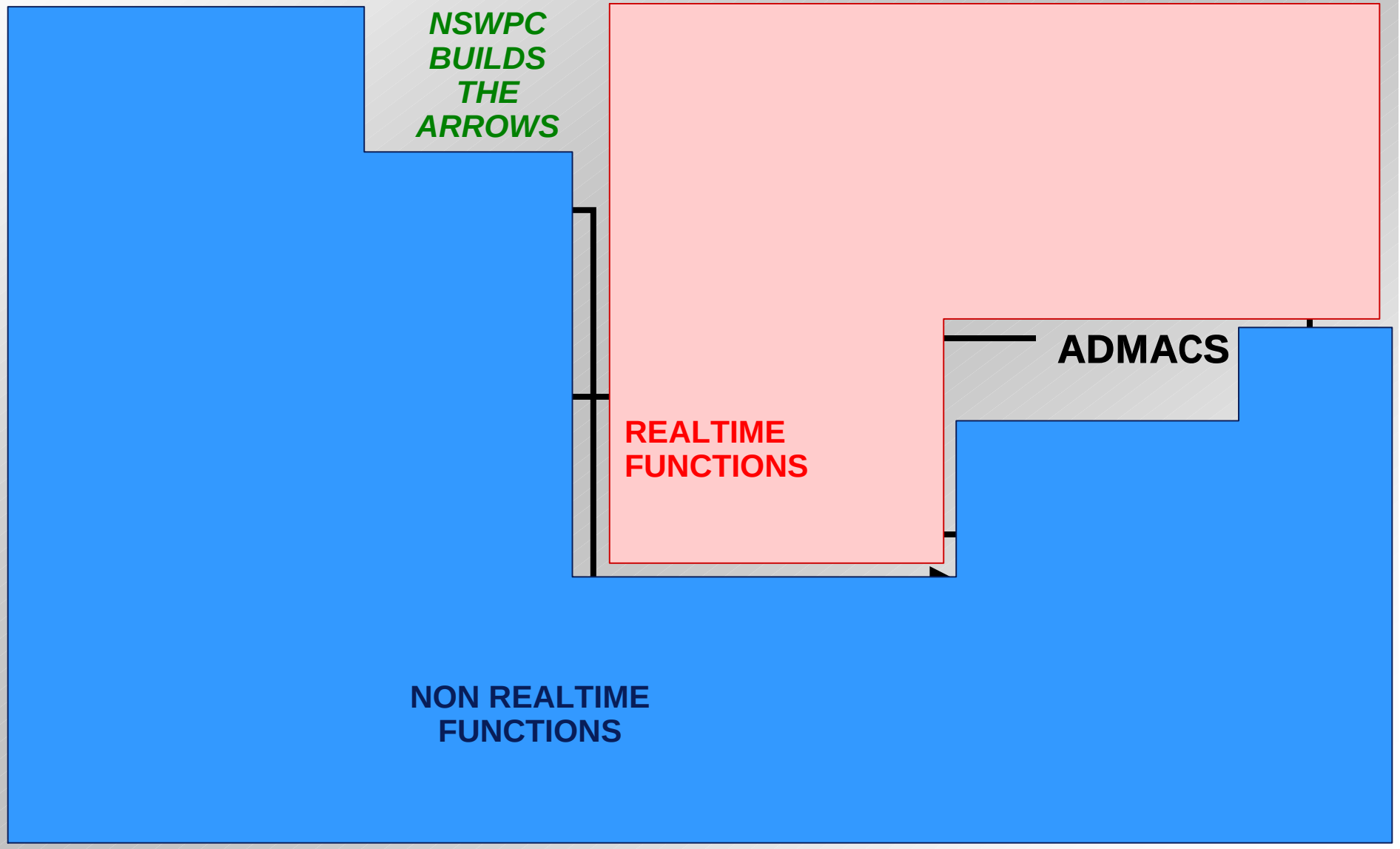
Engineering an Architecture

System of Systems Architectures are Abstractions

- Architecture is *not* the physical structure
- Rather, it is the protocols
  - Internet succeeded through acceptance of IP and HTTP as standards
  - Physical layer was necessary but not sufficient requirement
- Collaborative body controls architecture evolution
- For DoD
  - Requires individual programs make effort to collaborate
  - But permits maintenance of current program office
  - Fiefdoms and emissaries
  - SPF, CRD, DAL are moving along this line



Engineering an Architecture
Collaborative Approach



Engineering an Architecture

- **Ultimately, Best Value Architecture will be Designed by Industry**
  - **Government leads on operational requirements**
  - **Industry leads on implementation**
- **However, Any Approach will Have to be Tempered by Need to Interoperate with Other Programs**
  - **Best value architecture for JMPS alone may not be best for Navy overall**
  - **Need collaborative effort between programs on an standards for data, accessing data, and middleware**
  - **Act as city planners developing building codes vice a civil architect enforcing a design**
  - **Has potential to extend to non-Navy platforms (CAC2S, BCC, EMPRS)**

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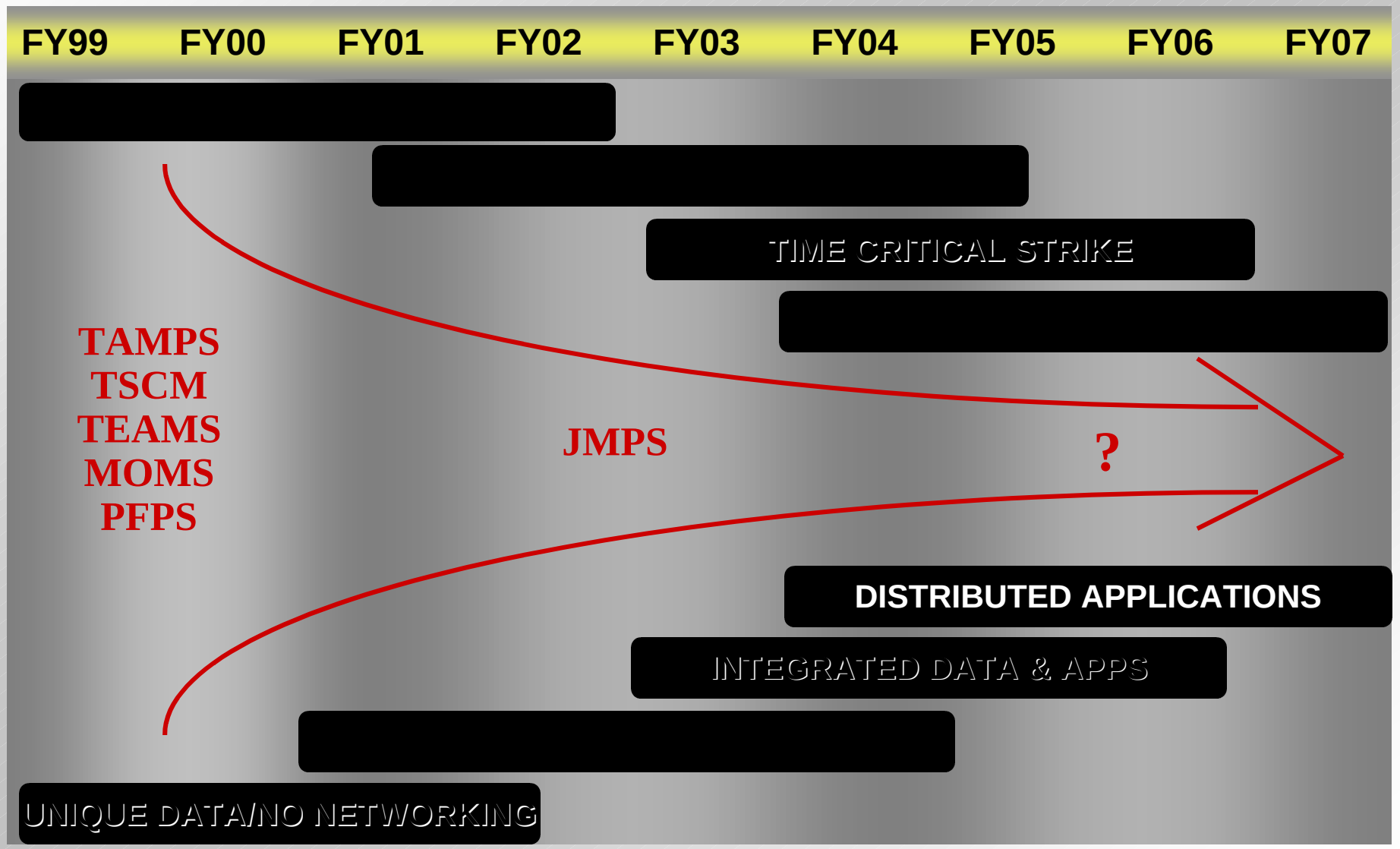
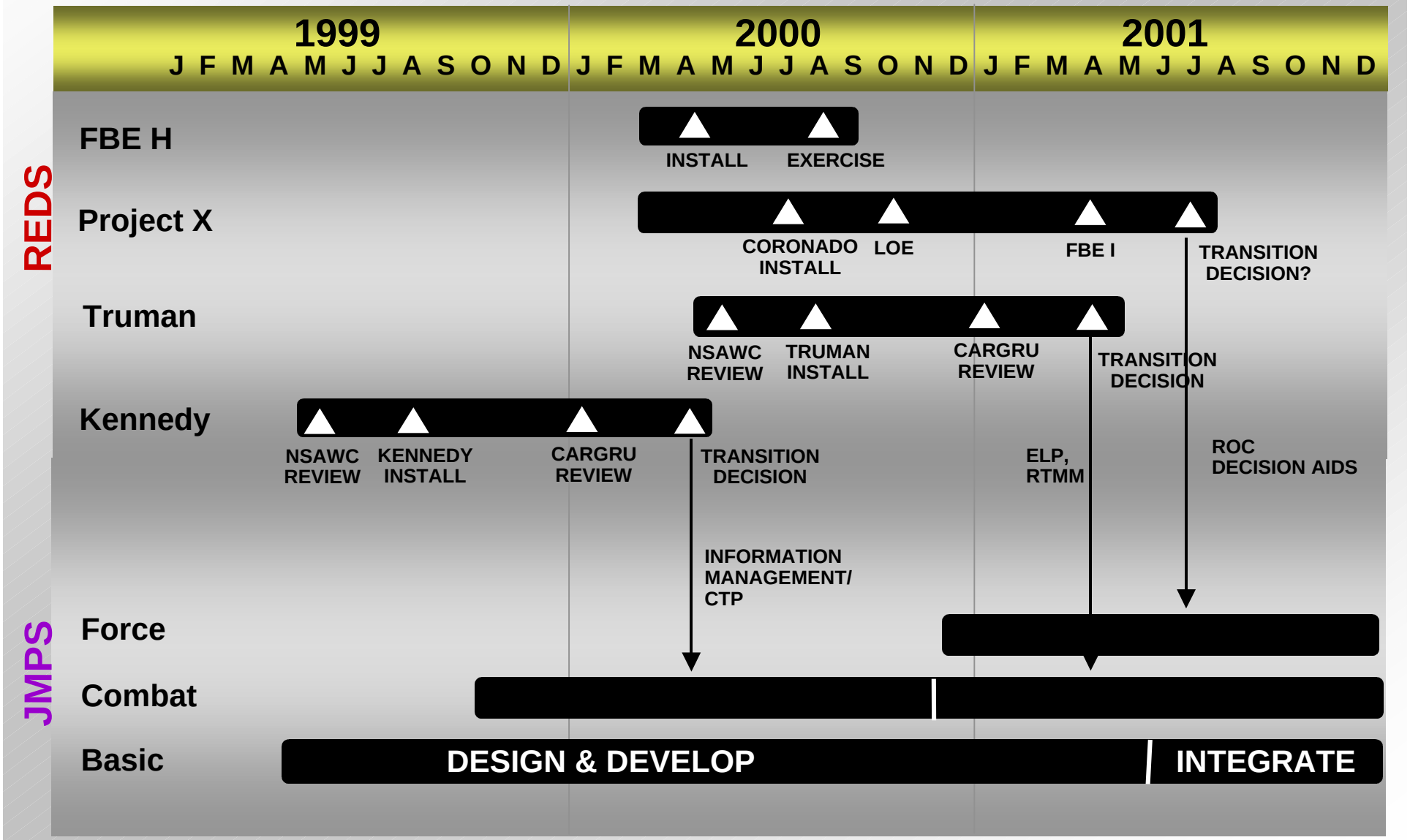
- **Engineering an Architecture**
- **Summary**
  - **Planned Navy Activity**
  - **What Does this Mean to Al Franken**

Summary

Future of JMPS (at least for the Navy)



Summary
Schedule



Summary
Collaborative Group to Design Architecture

- Meeting with other programs to propose engineering effort
  - ADMACS 23 April
  - GCCS/REDS Working Group Ongoing
  - HQ USMC on CAC2S
  - NSWPC as soon as Gonzo is sentient
  - BCC TBD
  - Realtime DII COE IPT TBD
  - Lockheed Meeting 17 May
- If concur, then begin effort to define common requirements and areas of interest
- PMA233 kicks off Force Level Requirements analysis Summer/Fall of 2000

Summary
What Does This Mean to Al Franken?

- Government Needs to Understand Capabilities and Limits That Come with JMPS Version 1 Architecture
  - Given use of Windows 2000, can current JMPS framework support realtime
  - Does JMPS team have a technical preference on middleware
    - CORBA
    - JAVA
    - PS
    - None of the Above
  - Is there anything in being done in version 1 that precludes achieving our future requirements
- JMPS needs an FY01 Decision on Networking and Server Architecture (and NSWPC needs input, too)
- Role of Logicon
  - Has been limited as government sorts out acquisition strategy
  - Will continue to be limited due to funding, but participation is vital lest the government heads off on wrong vector